

ABSTRACT

A compact magnet and an RF probe which can accommodate a human extremity such as a heel are used to construct a compact MRI system for diagnosis and follow-up of osteoporosis and other diseases.

5 Methods for measuring and calculating proton density in inhomogeneous static magnetic field, magnetic field gradients, and RF magnetic field are provided using 2D spin-echo image acquisitions with external reference materials and image analyses. The measured proton density of bone marrow is used for computation of trabecular
10 bone volume fraction, which can be used for diagnosis of osteoporosis and other diseases.